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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM-140; Special Conditions No. 25-ANM-125]

#### Special Conditions: Lockheed Martin Aerospace Corp. Model L382J Airplane, High-Intensity Radiated Fields

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for the Lockheed Martin Aerospace Corp. Model L382J airplane. This model airplane will utilize new avionics/electronic systems, Mil Std 1553 data buses and dual head-up displays that provide critical data to the flightcrew. The applicable regulations do not contain adequate or appropriate safety standards for the protection of these systems from the effects of high-intensity radiated fields. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** The effective date of these special conditions is April 2, 1997. Comments must be received on or before May 27, 1997.

**ADDRESSES:** Comments on these special conditions may be mailed in duplicate to: Federal Aviation Administration, Office of the Assistant Chief Counsel, Attn: Rules Docket (ANM-7), Docket No. NM-140, 1601 Lind Avenue SW., Renton, Washington 98055-4056; or delivered in duplicate to the Office of the Assistant Chief Counsel at the above address. Comments must be marked: Docket No. NM-140. Comments may be inspected in the Rules Docket

weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

#### FOR FURTHER INFORMATION CONTACT:

Mike Zielinski, Standardization Branch, ANM-113, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (206) 227-2279.

#### SUPPLEMENTARY INFORMATION:

##### Comment Invited

The FAA has determined that good cause exists for making these special conditions effective upon issuance; however, interested persons are invited to submit such written data, views, or arguments as they may desire. Communications should identify the regulatory docket and special condition number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator. These special conditions may be changed in light of the comments received. All comments submitted will be available in the Rules Docket for examination by interested persons, both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Persons wishing the FAA to acknowledge receipt of their comments submitted in response to this request must submit with those comments a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket No. NM-140." The postcard will be date stamped and returned to the commenter.

##### Background

On August 2, 1992, Lockheed Martin Aerospace Corp. applied for an amendment to their Type Certificate No. A1SO to include their new Model L382J. The Model L382J is a derivative of the L382B/E/G currently approved under Type Certificate No. A1SO, and features a new engine (with approximately the same rated horsepower, but heavily flat-rated) and propeller, both of which are controlled by a full authority digital engine control. Additionally, the flight deck is substantially modified by the installation of four liquid crystal flight displays, dual head-up displays, and Mil Std 1553 data buses. The flight

engineer position is deleted, requiring automation of some functions as well as redesign of the front and overhead panels. Some structure has been modified but the aerodynamics of the airplane are essentially unchanged. The latest Part 25 requirement will be used for all significantly modified portions of the Model 382J (as compared to the present L382), and, for the unmodified portions of the airplane, the applicable certification standard will be the Part 25 rules that were effective on February 1, 1965.

##### Type Certification Basis

Under the provisions of § 21.101, Lockheed Martin Aerospace Corp. must show that the Model L382J airplanes meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A1SO or the applicable regulations in effect on the date of application for the changes to the Model L382. In addition, the certification basis includes certain special conditions and later amended sections of Part 25 that are not relevant to these proposed special conditions.

If the Administrator finds that the applicable airworthiness regulations (i.e., Part 25, as amended) do not contain adequate or appropriate safety standards for the L382J because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16 to establish a level of safety equivalent to that established in the regulations.

Special conditions, as appropriate, are issued in accordance with § 11.49 of the FAR after public notice, as required by §§ 11.28 and 11.29, and become part of the type certification basis in accordance with § 21.101(b)(2).

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design feature, the special conditions would also apply to the other model under the provisions of § 21.101(a)(1).

##### Novel or Unusual Design Features

The Model L382J incorporates new avionic/electronic installations, including a digital Electronic Flight

Instrument System (EFIS), Mil Std 1553 data buses and dual head-up displays that provide critical data to the flightcrew and a Full Authority Digital Engine Control (FADEC) system that controls critical engine parameters. These systems may be vulnerable to high-intensity radiated fields (HIRF) external to the airplane.

#### Discussion

There is no specific regulation that addresses protection requirements for electrical and electronic systems from HIRF. Increased power levels from ground based radio transmitters and the growing use of sensitive electrical and electronic systems to command and control airplanes have made it necessary to provide adequate protection.

To ensure that a level of safety is achieved equivalent to that intended by the regulations incorporated by reference, special conditions are issued for the L382J which require that new technology electrical and electronic systems, such as the EFIS, FADEC, HUD, etc., be designed and installed to preclude component damage and interruption of function due to both the direct and indirect effects of HIRF.

#### High-Intensity Radiated Fields

With the trend toward increased power levels from ground based transmitters, plus the advent of space and satellite communications, coupled with electronic command and control of the airplane, the immunity of critical digital avionics systems to HIRF must be established.

It is not possible to precisely define the HIRF to which the airplane will be exposed in service. There is also uncertainty concerning the effectiveness of airframe shielding for HIRF. Furthermore, coupling of electromagnetic energy to cockpit-installed equipment through the cockpit window apertures is undefined. Based on surveys and analysis of existing HIRF emitters, an adequate level of protection exists when compliance with the HIRF protection special condition is shown with either paragraphs 1 or 2 below:

1. A minimum threat of 100 volts per meter peak electric field strength from 10 KHz to 18 GHz.

a. The threat must be applied to the system elements and their associated wiring harnesses without the benefit of airframe shielding.

b. Demonstration of this level of protection is established through system tests and analysis.

2. A threat external to the airframe of the following field strengths for the frequency ranges indicated.

Frequency	Peak (V/M)	Average (V/M)
10 KHz–100 KHz .....	50	50
100 KHz–500 KHz .....	60	60
500 KHz–2000 KHz .....	70	70
2 MHz–30 MHz .....	200	200
30 MHz–100 MHz .....	30	30
100 MHz–200 MHz .....	150	33
200 MHz–400 MHz .....	70	70
400 MHz–700 MHz .....	4,020	935
700 MHz–1000 MHz .....	1,700	170
1 GHz–2 GHz .....	5,000	990
2 GHz–4 GHz .....	6,680	840
4 GHz–6 GHz .....	6,850	310
6 GHz–8 GHz .....	3,600	670
8 GHz–12 GHz .....	3,500	1,270
12 GHz–18 GHz .....	3,500	360
18 GHz–40 GHz .....	2,100	750

As discussed above, these special conditions would be applicable initially to the Model L382J. Should Lockheed Martin Aerospace Corp. apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well, under the provisions of § 21.101(a)(1).

#### Conclusion

This action affects only certain design features on the Lockheed Martin Aerospace Corporation Model L382J airplanes. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the airplane.

The substance of these special conditions for this airplane has been submitted to the notice and comment procedure in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. For this reason, and because a delay would significantly affect the certification of the airplane, which is imminent, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions immediately. Therefore, these special conditions are being made effective upon issuance. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

#### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these proposed special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

#### The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Lockheed Martin Aerospace Corp. Model L382J airplanes.

1. *Protection from Unwanted Effects of High-Intensity Radiated Fields (HIRF).* Each electrical and electronic system that performs critical functions must be designed and installed to ensure that the operation and operational capability of these systems to perform critical functions are not adversely affected when the airplane is exposed to high-intensity radiated fields.

2. For the purpose of this special conditions, the following definition applies: *Critical Functions.* Functions whose failure would contribute to or cause a failure condition that would prevent the continued safe flight and landing of the airplane.

Issued in Renton, Washington, on April 2, 1997.

**Darrell M. Pederson,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service, ANM-100.*

[FR Doc. 97-9244 Filed 4-9-97; 8:45 am]

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 96-NM-93-AD; Amendment 39-9992; AD 97-08-04]

RIN 2120-AA64

#### Airworthiness Directives; Airbus Model A320-111, -211, -212, and -231 Series Airplanes

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

**SUMMARY:** This amendment adopts a new airworthiness directive (AD), applicable to certain Airbus Model A320-111, -211, -212, and -231 series airplanes, that requires reinforcement of the tail section of the fuselage at frames 68 and 69. This amendment is prompted by reports indicating that the tail section has struck the runway during takeoffs and landings. The actions specified by this AD are intended to prevent structural damage to the tail section when it strikes the runway; that